Date: Fri, 24 Jun 94 18:03:33 PDT
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
Reply-To: Info-Hams@UCSD.Edu
Precedence: Bulk
Subject: Info-Hams Digest V94 #700
To: Info-Hams

Info-Hams Digest   Fri, 24 Jun 94   Volume 94 : Issue 700

Today's Topics:

Date: Thu, 23 Jun 1994 19:36:00 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!iat.holonet.net!michaelr!
ray.wade@network.ucsd.edu
Subject: "Renewal" reusable al
To: info-hams@ucsd.edu

On 06-21-94 BILL COLEMAN wrote to ALL...

BC> Nicads have a pretty long self-discharge rate. Lead acid cells, on the
BC> other
BC> hand.... And I don't see why you couldn't pop a set of fully charged
BC> nicads
BC> in like you do the renewals.

Store them in the refrigerator (I do!) and they will stay charged even longer!

K5JCM

* OFFLINE 1.56 * A cat will go "quack!" if you squeeze it hard enough.
....

Date: Thu, 23 Jun 94 21:49:00 -0800
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!iat.holonet.net!megasys!tim.marek@network.ucsd.edu
Subject: Contest & VHF Reflectors
To: info-hams@ucsd.edu

OK, I'm now on Internet via a local BBS. Now how the heck to I get conected with the CONTEST and VHF Reflectors I've heard so much about? Any and all help apprecia

----

Date: 24 Jun 94 15:06:51 GMT
From: news-mail-gateway@ucsd.edu
Subject: Frequencies near Kenndy Space Center during a launch.
To: info-hams@ucsd.edu

>Does anyone have a list of frequencies
>near Kennedy Space Center that are in use during a shuttle
>launch.
>Lad Nagurney WA3EEC

well, for just general monitoring of what's going on, i'd suggest just listening to the K4GCC repeater 146.94 MHz in titusville. mission control audio is retransmitted there. I don't know if the ATV guys will have nasa select up on their repeater or not.

bill wb9ivr

Date: 24 Jun 94 07:46:34 -0800

From: agate!howland.reston.ans.net!europa.eng.gtefsd.com!newsxfer.itd.umich.edu!
zip.eecs.umich.edu!yeshua.marcam.com!wrdis02.robins.af.mil!apollo.robins.af.mil!
woodj@ames.arpa
Subject: Gettysburg Address
To: info-hams@ucsd.edu

I lost the previous post, but here's the FCC's address as per the
latest Form 610 instructions:

FEDERAL COMMUNICATIONS COMMISSION
1270 FAIRFIELD RD
GETTYSBURG PA 17325-7245
_..._

Jim, KA4GHX

Date: Thu, 23 Jun 1994 14:55:52 GMT
From: ihnp4.ucsd.edu!mvb.saic.com!news.cerf.net!usc!howland.reston.ans.net!
europa.eng.gtefsd.com!sundog.tiac.net!usenet.elf.com!rpi!psinntp!arrl.org!
sford@network.ucsd.edu
Subject: KAM Plus
To: info-hams@ucsd.edu

Ronald L. Barrett (ronb@netcom.com) wrote:

: Would like to hear from anyone who is using the KAM Plus modem. I'm considering
buying one and would appreciate a frank appraisal on the unit. Would also like to
hear some comments on the companion software KAM Gold.

: Thanks.

: Ron Barrett
: K6MZW
:

There is a complete review of the KAM Plus (with G-TOR) in the
June issue of QST magazine.

Steve, WB8IMY

Date: 24 Jun 1994 20:34:09 GMT
From: nothing.ucsd.edu!brian@network.ucsd.edu
Subject: Lead Acid Storage Batteries
To: info-hams@ucsd.edu

[first posted a few years ago]
I've been doing some research on lead-acid batteries with an eye towards using them to provide power for our ham radio repeater site.

Our site is difficult to get to, and the commercial AC mains power goes away at times. Everything in the site runs off a nominal 12 volts DC. During idle periods, the equipment may only draw a few amperes, but most of the transmitters can draw up to 10 to 15 amps each. A maximum drain of 100 amps isn't out of the question, although it would probably be only for a few minutes at a time. Some systems (such as the digital communications equipment) key on and off quite regularly, with perhaps as much as a 50% duty cycle, whilst others may not key for hours and then stay on for as long as an hour or two (voice repeaters during drivetime). We do not want there to be any interruption of power when the mains fail. We don't believe that most of the outages are of a duration that a generator will be necessary - a few hours is sufficient.

It is clear that a good solution to our problem is a bank of lead-acid batteries capable of supplying the peak current, floating across a supply that can recharge them and supply the standby and perhaps one or two transmitter's demand.

Ok, that's the problem. Here's what I've found.

Lead-Acid batteries commonly available today can be roughly grouped into three categories by construction and intended use:

1. Automotive starting
2. Traction
3. Stationary

Automotive starting batteries are formulated with thin pasted plates and are designed to supply high peak currents for brief periods of time whilst cranking an engine. They are not expected to be discharged to more than perhaps 75% of capacity, and are expected to be recharged immediately after discharge. If used in deep-discharge or float service they will not last long. (I.e., the capacity of the battery will diminish fairly quickly. While it will still act as a battery, it will not be able to supply its rated capacity soon after being placed in the wrong kind of service.)

Traction batteries are made with thick pasted plates and have very rugged separators between the plates to make the battery more immune to physical shock and vibration, and to reduce the chance of failure due to dendritic growth during recharging. These batteries are sold for use in electric forklifts, golf carts, marine trolling motors, and RV

power. They are designed to be discharged nearly fully each day, and recharged each night. Because there is some tradeoff in battery life by using the pasted plate construction to keep the size and weight of the battery down, they are not used in applications where extremely long life is required. The commonly-available Deep Cycle Marine batteries are of this general type.

Stationary batteries are made with thick solid plates. They are designed to be used as standby power, supplying minimal power and kept in a state of nearly full charge until needed. They can take deep discharge. Because of the solid plate structure, they are bigger and heavier, but their lifetime is much longer. One source suggests that 10 years is not unusual. Some photovoltaic storage batteries (for solar-powered homes and such) are of this type.

The best battery for our application is the Stationary battery, but they are not commonly available. Much more readily obtained are the Marine/RV batteries, at about $50 apiece.

Charging and discharging these batteries is a big question. I posted a query to the net and received about a dozen replies, most of which contradicted each other in one or more points. However, there is some consistency in the information available in our library, and I'll try to summarize it below.

Note that all the voltages given below are for batteries at working temperature - typically 80F (27C).

DISCHARGE:

Batteries are rated at an Amp-Hour capacity at a specific rate. For traction type batteries, this is typically a five hour rate, so a fully-charged 100 Ah traction battery in good condition can supply 20 amps for 5 hours before it is exhausted. Stationary batteries are usually rated at a 10 hour rate, and automotive (if rated in Ah at all) are given for a 20 hour rate. The discharge curve is NOT linear; if you double the current drain, you will get less than half the time. Similarly, if you halve the drain, you will get more than twice the time.

Each type of battery has a specified voltage at which it is considered completely discharged. If discharge continues below this voltage, the battery life may be considerably shortened, and repeated abuse of this kind can result in a battery which cannot practically be recharged. Each battery manufacturer specifies this voltage; in general, the final voltage for the three general types of batteries are

automotive	1.75 v per cell
traction	1.70

stationary 1.85

Thus a typical 12 volt marine battery with 6 cells should not be discharged below about 10.2 volts.

Another way of looking at it is that no cell should be discharged more than about .3 v below its full-charge rest voltage.

A typical cell will show the following voltages:

fully charged, open circuit, at rest with no charge/discharge for at least 12 hours	2.12 v/cell
As soon as load is applied (internal v-drop)	2.00
fully discharged, under load	1.70
fully discharged, open circuit	1.99
beginning of charging	2.10
70% to 80% charge (gassing begins)	2.35
full charge	2.65

CHARGING:

Liquid-electrolyte lead-acid batteries can be recharged at any rate that exceeds internal and surface discharge rates, and which does not cause excessive gassing (liberation of oxygen, hydrogen, and steam).

In non-float service, there are several simple chargers.

A single-rate (constant-current) charger limits its charge rate to about 7% of the Ah capacity of the battery; for a 100 Ah battery, it would charge at a rate of 7 amperes. Since the battery will start at about 2.1 v per cell, and finish at about 2.7 v per cell, the charger must be able to vary its voltage over this range. For a "12 volt" battery with 6 cells, the charger will need to supply between 12.6 and 16 volts over the duration of the charge. Charging is complete when the battery reaches 2.65 to 2.7 volts per cell.

A simple taper charger is a constant-voltage source set to 2.8 volts per cell with a series ballast (typically a resistor, but a choke or the internal resistance of the supply can be used) that limits the output current to 7%C when the battery is started charging at 2.1 v/cell. Again, charging is complete when 2.7v/cell is reached.

Trickle-charging of a fully-charged battery can be done to keep it charged. This is done by supplying .5 to 1 mA per Ah capacity. Trickle charging should be discontinued when it has continued for at least 24 hours and the battery has reached 2.25 v/cell. Typically, trickle chargers are set to run perhaps once a week. Because of their thin plate construction, automotive-type batteries will deteriorate if trickle-charged for more than perhaps six months.

An interesting research result was that using pulsating rectified AC or superimposing a small AC current on pure DC charging current increased battery life by up to 30%. Apparently the mechanism is that is reduces gassing and leads to a more porous lower-resistance plate, and lessens the tendency to form dendrites during charging.

In float service, where the battery is in parallel with the mains supply, the supply voltage must be set to 2.15 to 2.20 v/cell. This will charge the battery, and avoids excessive gassing, but does not serve to "freshen" the cells - there is not enough gassing activity to move electrolyte around and clear the beginning of deposits from the surfaces of the plates. It is recommended that batteries in float service occasionally (perhaps once a month) be charged to 2.65 v/cell to freshen and equalize the charges. In large installations, this is done by switching parts of the battery banks out of service in rotation. In smaller systems that can tolerate the voltage excursion, it can be done by simply boosting the output of the mains supply.

Charging inevitably leads to some water loss due to gassing; 100Ah of a gassing charge (2.4v or more per cell) will yield about 1.2 oz of water loss. Hydrocap Corp [975 NW 95th St, Miami Fla, (305)696-2504] makes a replacement filler cap that contains a catalytic material that recondenses emitted steam, and recombines the hydrogen and oxygen gasses into pure water that then dibbles back into the cell, greatly reducing the required maintenance. With the available flame arrestor option, they sound ideal for unattended battery systems, and should greatly reduce the danger of fire and explosion from liberated hydrogen. They're about $5-$10 per cell.

To read further:

Smith, George. Storage Batteries, including operation, charging, maintenance, and repair. ISBN 273 43448 9, TK2941.S57 1968

Aguf, I.A. and M.A. Dasoyan. The Lead Accumulator (translated from the Russian by S Sathyanarayana). Calcutta, 1968

Longrigg, Paul. Rapid charging of lead-acid batteries for electric vehicle propulsion and solar energy storage. DOE/NTIS 1981.

Aren't libraries wonderful?
     - Brian

Date: 24 Jun 1994 12:43:52 GMT
From: agate!howland.reston.ans.net!europa.eng.gtefsd.com!newsxfer.itd.umich.edu!news1.oakland.edu!vela.acs.oakland.edu!prvalko@ames.arpa
Subject: Licensing delays
To: info-hams@ucsd.edu

Interesting post!

While I was waiting *** SIX MONTHS *** for my license to arrive in 1976 (during the CB boom) I entered the local club's Transmitter hunt and came in second place without even ever having to transmit :-)

That was besides daily listening to the code on my just built HW-16.

73 =paul= wb8zjl

Date: Wed, 22 Jun 1994 22:15:31 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!vixen.cso.uiuc.edu!sdd.hp.com!col.hp.com!news.dtc.hp.com!srgenprp!bsplaine@network.ucsd.edu
Subject: Motorcycle Mobile - 73 Magazine
To: info-hams@ucsd.edu

Steve Bunis SE Southwest Chicago (doc@webrider.central.sun.com) wrote:

: Greetings -

: I was told that a fairly recent issue of 73 magazine tested different
: headsets for motorcycle helmet use. I would very much appreciate it
: if someone could let me know which issue, so I can try and track it
: down, or give me a quick summary of what they found and recommend. I'm
: presently trying to set up my motorcycle for mobile use and am preparing
: to buy the headset pieces for my helmet, and also starting to set up the
: wiring. A related question would be suggestions as to the circuitry that
: would allow a radar detector alarm to break into the earphones even while
: having a QSO.

Not sure about this article you refer to, but the latest issue of Motorcycle Consumer News has a review of the different setups for inter and intra bike

communicators. I hope I am right here... I don't have the mags here. I
also take CQ (& QST) but I don't believe the article was in either of those.

I'd sure be interested in what you find out........

Bill
DOD#2440
--
```
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\
\         Bill Splaine                E-MAIL  > bsplaine@sr.hp.com         /
/        Hewlett Packard              VOICE   > (707) 577-2913             \
\      Santa Rosa, CA 95403           FAX     > (707) 577-2095             /
/ ALL STANDARD DISCLAIMERS APPLY      PACKET  > N6GHG@KC6PJW               \
\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/
```

Date: 24 Jun 1994 17:19:16 GMT
From: ihnp4.ucsd.edu!news.cerf.net!lsi.lsil.com!up55!achien@network.ucsd.edu
Subject: need info on Helical filters design
To: info-hams@ucsd.edu

I am looking for information on how to design a "Helical filter" . Any books,
papers or design equations available for this kind of filters?   I know "TOKO
coil" make this
kind of filters but I need to custom design my own filter.

Arthur Chien

Date: 24 Jun 94 13:50:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: ORBS$175.MICRO.AMSAT
To: info-hams@ucsd.edu

SB KEPS @ AMSAT $ORBS-175.D
Orbital Elements 175.MICROS

HR AMSAT ORBITAL ELEMENTS FOR THE MICROSATS
FROM WA5QGD FORT WORTH,TX June 24, 1994
BID: $ORBS-175.D
TO ALL RADIO AMATEURS BT

```
Satellite: UO-14
Catalog number: 20437
Epoch time:      94170.25444630
Element set:       3
Inclination:       98.5884 deg
RA of node:       255.0029 deg
Eccentricity:    0.0010695
Arg of perigee:   181.0504 deg
Mean anomaly:     179.0654 deg
Mean motion:   14.29847256 rev/day
Decay rate:        5.2e-07 rev/day^2
Epoch rev:           22988
Checksum:              305

Satellite: AO-16
Catalog number: 20439
Epoch time:      94174.15857677
Element set:     803
Inclination:       98.5981 deg
RA of node:       260.0929 deg
Eccentricity:    0.0010970
Arg of perigee:   170.1818 deg
Mean anomaly:     189.9580 deg
Mean motion:   14.29901446 rev/day
Decay rate:        4.6e-07 rev/day^2
Epoch rev:           23045
Checksum:              333

Satellite: DO-17
Catalog number: 20440
Epoch time:      94174.18230054
Element set:     803
Inclination:       98.5989 deg
RA of node:       260.4403 deg
Eccentricity:    0.0011328
Arg of perigee:   169.1131 deg
Mean anomaly:     191.0302 deg
Mean motion:   14.30040957 rev/day
Decay rate:        3.4e-07 rev/day^2
Epoch rev:           23047
Checksum:              264

Satellite: WO-18
Catalog number: 20441
Epoch time:      94170.23945354
Element set:     804
Inclination:       98.5977 deg
```

```
RA of node:       256.5458 deg
Eccentricity:    0.0011559
Arg of perigee:   181.6830 deg
Mean anomaly:     178.4313 deg
Mean motion:   14.30014708 rev/day
Decay rate:        2.9e-07 rev/day^2
Epoch rev:           22991
Checksum:              316

Satellite: LO-19
Catalog number: 20442
Epoch time:      94170.21749238
Element set:     801
Inclination:       98.5981 deg
RA of node:       256.7818 deg
Eccentricity:    0.0011929
Arg of perigee:   181.8684 deg
Mean anomaly:     178.2465 deg
Mean motion:   14.30110837 rev/day
Decay rate:        3.9e-07 rev/day^2
Epoch rev:           22992
Checksum:              331

Satellite: UO-22
Catalog number: 21575
Epoch time:      94170.22487327
Element set:     505
Inclination:       98.4347 deg
RA of node:       244.6813 deg
Eccentricity:    0.0007038
Arg of perigee:   289.9192 deg
Mean anomaly:      70.1229 deg
Mean motion:   14.36919982 rev/day
Decay rate:        5.1e-07 rev/day^2
Epoch rev:           15337
Checksum:              320

Satellite: KO-23
Catalog number: 22077
Epoch time:      94171.73856331
Element set:     400
Inclination:       66.0787 deg
RA of node:       272.5419 deg
Eccentricity:    0.0014492
Arg of perigee:   286.1502 deg
Mean anomaly:      73.7921 deg
Mean motion:   12.86286696 rev/day
Decay rate:       -3.7e-07 rev/day^2
```

```
Epoch rev:            8724
Checksum:              319

Satellite: AO-27
Catalog number: 22825
Epoch time:      94170.68921790
Element set:     299
Inclination:       98.6530 deg
RA of node:       246.4717 deg
Eccentricity:    0.0008021
Arg of perigee:   198.3357 deg
Mean anomaly:     161.7536 deg
Mean motion:   14.27627002 rev/day
Decay rate:        4.3e-07 rev/day^2
Epoch rev:            3804
Checksum:              313

Satellite: IO-26
Catalog number: 22826
Epoch time:      94170.24955337
Element set:     299
Inclination:       98.6524 deg
RA of node:       246.0735 deg
Eccentricity:    0.0008442
Arg of perigee:   201.6060 deg
Mean anomaly:     158.4763 deg
Mean motion:   14.27730782 rev/day
Decay rate:        2.1e-07 rev/day^2
Epoch rev:            3798
Checksum:              317

Satellite: KO-25
Catalog number: 22830
Epoch time:      94170.75009712
Element set:     304
Inclination:       98.5519 deg
RA of node:       243.7911 deg
Eccentricity:    0.0011759
Arg of perigee:   164.8772 deg
Mean anomaly:     195.2762 deg
Mean motion:   14.28057589 rev/day
Decay rate:        4.5e-07 rev/day^2
Epoch rev:            3806
Checksum:              321

/EX

------------------------------
```

```
Date: 24 Jun 94 13:53:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: ORBS$175.MISC.AMSAT
To: info-hams@ucsd.edu

SB KEPS @ AMSAT  $ORBS-175.M
Orbital Elements  175.MISC

HR AMSAT ORBITAL ELEMENTS FOR MANNED AND MISCELLANEOUS SATELLITES
FROM WA5QGD FORT WORTH,TX June 24, 1994
BID: $ORBS-175.M
TO ALL RADIO AMATEURS BT

Satellite: POSAT
Catalog number: 22829
Epoch time:      94170.75531118
Element set:     292
Inclination:       98.6497 deg
RA of node:       246.6007 deg
Eccentricity:    0.0009625
Arg of perigee:   185.5514 deg
Mean anomaly:     174.5560 deg
Mean motion:   14.28030137 rev/day
Decay rate:        5.5e-07 rev/day^2
Epoch rev:            3806
Checksum:              301

Satellite: MIR
Catalog number: 16609
Epoch time:      94173.46326644
Element set:     649
Inclination:       51.6451 deg
RA of node:       159.9876 deg
Eccentricity:    0.0003094
Arg of perigee:    70.0203 deg
Mean anomaly:     290.1120 deg
Mean motion:   15.56388790 rev/day
Decay rate:      3.227e-05 rev/day^2
Epoch rev:           47686
Checksum:              315

Satellite: HUBBLE
Catalog number: 20580
Epoch time:      94173.91026419
Element set:     499
Inclination:       28.4693 deg
RA of node:       199.2219 deg
```

```
Eccentricity:    0.0006283
Arg of perigee:   145.3161 deg
Mean anomaly:     214.7835 deg
Mean motion:   14.90629917 rev/day
Decay rate:       5.01e-06 rev/day^2
Epoch rev:            3024
Checksum:              300

Satellite: GRO
Catalog number: 21225
Epoch time:      94170.21861132
Element set:     108
Inclination:       28.4614 deg
RA of node:       218.0463 deg
Eccentricity:    0.0003555
Arg of perigee:   230.9886 deg
Mean anomaly:     129.0384 deg
Mean motion:   15.40952200 rev/day
Decay rate:      2.542e-05 rev/day^2
Epoch rev:            5725
Checksum:              264

Satellite: UARS
Catalog number: 21701
Epoch time:      94171.91923479
Element set:     542
Inclination:       56.9839 deg
RA of node:       144.1019 deg
Eccentricity:    0.0005885
Arg of perigee:   101.2249 deg
Mean anomaly:     258.9448 deg
Mean motion:   14.96459021 rev/day
Decay rate:     -1.878e-05 rev/day^2
Epoch rev:           15149
Checksum:              327

/EX
```

Date: 24 Jun 94 13:49:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: ORBS$175.OSCAR.AMSAT
To: info-hams@ucsd.edu

SB KEPS @ AMSAT $ORBS-175.O
Orbital Elements 175.OSCAR

```
HR AMSAT ORBITAL ELEMENTS FOR OSCAR SATELLITES
FROM WA5QGD FORT WORTH,TX June 24, 1994
BID: $ORBS-175.O
TO ALL RADIO AMATEURS BT

Satellite: AO-10
Catalog number: 14129
Epoch time:      94161.37059705
Element set:     288
Inclination:       27.0950 deg
RA of node:       323.3862 deg
Eccentricity:    0.6022573
Arg of perigee:   185.3079 deg
Mean anomaly:     163.3129 deg
Mean motion:    2.05878627 rev/day
Decay rate:       -8.9e-07 rev/day^2
Epoch rev:            8264
Checksum:              320

Satellite: UO-11
Catalog number: 14781
Epoch time:      94173.06474633
Element set:     702
Inclination:       97.7861 deg
RA of node:       187.5613 deg
Eccentricity:    0.0010677
Arg of perigee:   254.9523 deg
Mean anomaly:     105.0499 deg
Mean motion:   14.69223055 rev/day
Decay rate:       1.36e-06 rev/day^2
Epoch rev:           55102
Checksum:              307

Satellite: RS-10/11
Catalog number: 18129
Epoch time:      94173.46518979
Element set:     912
Inclination:       82.9241 deg
RA of node:       324.9389 deg
Eccentricity:    0.0012694
Arg of perigee:    16.2450 deg
Mean anomaly:     343.9106 deg
Mean motion:   13.72338600 rev/day
Decay rate:        4.1e-07 rev/day^2
Epoch rev:           35063
Checksum:              305

Satellite: AO-13
```

```
Catalog number: 19216
Epoch time:      94166.34337152
Element set:     924
Inclination:       57.7884 deg
RA of node:       247.1622 deg
Eccentricity:    0.7213082
Arg of perigee:   343.7462 deg
Mean anomaly:       2.0006 deg
Mean motion:    2.09724920 rev/day
Decay rate:      -4.05e-06 rev/day^2
Epoch rev:            4597
Checksum:              295

Satellite: FO-20
Catalog number: 20480
Epoch time:      94169.92864811
Element set:     698
Inclination:       99.0371 deg
RA of node:       321.4208 deg
Eccentricity:    0.0541031
Arg of perigee:   335.5902 deg
Mean anomaly:      22.0420 deg
Mean motion:   12.83225784 rev/day
Decay rate:       -2.6e-07 rev/day^2
Epoch rev:           20435
Checksum:              283

Satellite: AO-21
Catalog number: 21087
Epoch time:      94173.85683540
Element set:     482
Inclination:       82.9437 deg
RA of node:       138.5177 deg
Eccentricity:    0.0037146
Arg of perigee:    68.6256 deg
Mean anomaly:     291.8858 deg
Mean motion:   13.74541420 rev/day
Decay rate:        9.4e-07 rev/day^2
Epoch rev:           17036
Checksum:              330

Satellite: RS-12/13
Catalog number: 21089
Epoch time:      94173.55362644
Element set:     702
Inclination:       82.9198 deg
RA of node:         7.4681 deg
Eccentricity:    0.0030653
```

Arg of perigee: 92.3538 deg
Mean anomaly: 268.1127 deg
Mean motion: 13.74042547 rev/day
Decay rate: 3.1e-07 rev/day^2
Epoch rev: 16938
Checksum: 311

Satellite: ARSENE
Catalog number: 22654
Epoch time: 94169.23096299
Element set: 263
Inclination: 1.8748 deg
RA of node: 99.1484 deg
Eccentricity: 0.2919067
Arg of perigee: 184.0582 deg
Mean anomaly: 172.2245 deg
Mean motion: 1.42202724 rev/day
Decay rate: -1.11e-06 rev/day^2
Epoch rev: 121
Checksum: 288

/EX

Date: Fri, 24 Jun 1994 12:41:59 GMT
From: agate!howland.reston.ans.net!news.cac.psu.edu!news.pop.psu.edu!ra!
usenet@ames.arpa
Subject: Transmission Line Impedance: Why so many?
To: info-hams@ucsd.edu

In article <2u8ktb$jcv@search01.news.aol.com>, NX7U <nx7u@aol.com> wrote:
>
> [some stuff deleted]
>
>Those sob's that taught me in college made me derive this stuff, and
>then I find out that it's done in Chipman, "Transmission Lines "
>(Schaum's outline series--if you have a vaguely technical bookstore
>nearby, especially in a college town, they will have it--and I
>guarantee you, it's one of the very best references on transmission
>lines you will ever own).
>1. For maximum power handling capability, Z0=35 ohms (or so) is
>optimum. That's why that standard value exists.
>2. For minimum attenuation per unit length, Z0=75 ohms (or so) is
>optimum. That's why that value exists.
>3. The compromise between these two optimum values in nearly 50 ohms
>(geometric mean). Perhaps that's how that value came about...just my
>guess.

>

   Optimum with respect to what?

-Dave
--
David Drumheller, KA3QBQ   phone: (202) 767-3524
Acoustics Division, Code 7140   fax: (202) 404-7732
Naval Research Laboratory
Washington, DC 20375-5350   e-mail: drumhell@claudette.nrl.navy.mil

----

Date: Thu, 23 Jun 1994 19:49:00 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!iat.holonet.net!michaelr!
ray.wade@network.ucsd.edu
Subject: Waiting for License? Wait
To: info-hams@ucsd.edu

 On 06-22-94 GEORGE GUILLORY wrote to ALL...

 GG> (I guess I will just be a lookie Lou on Field day.)

Go out anyway, George. You don't have to have a license to operate if
a "control operator" (anybody with a license) is there with you.

K5JCM

 * OFFLINE 1.56 * Ayer ago i kuldnt spel progrmr, now i are won!!
....

Date: 24 Jun 94 14:43:44 GMT
From: news-mail-gateway@ucsd.edu
Subject: Why so many transistor types?
To: info-hams@ucsd.edu

>If you think there are many different transmission line impedances, ponder
>this:

>Why are there so many transistor types??

>73 de Jack, K9CUN

The reason for so many transistor types is that engineers are going to do it

over and over again until they get it right!!

Hugh Wells,   W6WTU

End of Info-Hams Digest V94 #700
****